

Claims

1. An isolated and/or purified polynucleotide sequence comprising:
 - a) a polynucleotide sequence encoding: 1) a polypeptide sequence selected from the group consisting of SEQ ID NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, and 27; or 2) a polypeptide as set forth in Tables 2, 3, 4, 5, or 6;
 - b) a complementary polynucleotide sequence to: 1) a polynucleotide sequence encoding a polypeptide sequence selected from the group consisting of SEQ ID NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, and 27; or 2) a polynucleotide sequence encoding a polypeptide sequence as set forth in Tables 2, 3, 4, 5, or 6
 - c) a polynucleotide sequence having at least about 20% to 99.99% identity to a polynucleotide sequence of 1(a) or 1(b);
 - d) a fragment of a polynucleotide sequence according to 1(a) or 1(b);
 - e) a polynucleotide sequence encoding a variant of: 1) a polypeptide selected from the group consisting of SEQ ID NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, and 27; or 2) a polypeptide as set forth in Tables 2, 3, 4, 5, or 6;
 - g) a polynucleotide sequence encoding a polypeptide fragment of a polypeptide selected from the group consisting of SEQ ID NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, and 27, wherein the fragment has substantially the same serologic reactivity as the native polypeptide and substantially the same T-cell reactivity as the native polypeptide or fragment;
 - h) a polynucleotide sequence encoding a fragment of a variant polypeptide of a polypeptide selected from the group consisting of SEQ ID NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, and 27, wherein the fragment of the variant polypeptide has substantially the same serologic activity as the native polypeptide or substantially the same T-cell reactivity as the native polypeptide or fragment; or
 - i) a polynucleotide sequence encoding a multi-epitope construct.
2. A primer or detection probe for hybridization with a target sequence or the amplicon generated from a target sequence comprising a sequence of at least 8, 9, 10, 11,

12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, or 100 consecutive nucleotides of the polynucleotide sequences according to claim 1.

3. The isolated polynucleotide according to claims 1 or 2 further comprising a label.

4. The isolated polynucleotide according to claim 3, wherein said label is a: 1) radioactive label, 2) enzyme label, 3) chemiluminescent label, 4) fluorescent label, or 5) magnetic label.

5. The method of detecting *P. falciparum* in biological samples comprising contacting a biological sample with isolated polynucleotides of claim 1, 2, 3, or 4 and detecting the hybridization of said isolated polynucleotides with nucleic acids contained in said sample.

6. A DNA chip comprising polynucleotide sequences according to claims 1, 2, 3 or 4.

7. An isolated polynucleotide sequence according to claim 1 or 2, further comprising regulatory sequences.

8. The isolated polynucleotide sequence according to claim 7, wherein said regulatory sequences are promoters, enhancer elements, or termination sequences that are operably linked to said polynucleotide.

9. A vector comprising a promoter operably linked to a nucleic acid sequence according to claim 1.

10. The vector according to claim 9, wherein said vector contains one or more origins of replication.

11. The vector according to claim 10, wherein said vector contains one or more selectable markers.

12. The vector according to claim 9, wherein said vector contains one or more selectable markers.
13. The vector according to claim 9, wherein said vector is a vaccine vector or a viral vector.
14. A vector comprising a promoter operably linked to a nucleic acid sequence according to claim 2.
15. The vector according to claim 14, wherein said vector contains one or more origins of replication.
16. The vector according to claim 15, wherein said vector contains one or more selectable markers.
17. The vector according to claim 14, wherein said vector contains one or more selectable markers.
18. The vector according to claim 14, wherein said vector is a vaccine vector or a viral vector.
19. A host cell transformed by: 1) a vector according claim 9, 10, 11, 12, 13, 14, 15, 16, 17 or 18; or 2) a polynucleotide according to claim 1, 2, or 7.
20. A composition comprising a pharmaceutically acceptable carrier and a polynucleotide according to claim 1, 2, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17 or 18.
21. A method of inducing an immune response in an individual comprising the administration of a composition according to claim 20 in an amount sufficient to induce an immune response.
22. An isolated polypeptide comprising:

a) SEQ ID NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27;

b) a polypeptide as set forth in Tables 2, 3, 4, 5, or 6;

c) a fragment of a polypeptide or a variant polypeptide of: a) a polypeptide set forth in SEQ ID NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27; or b) a polypeptide as set forth in Tables 2, 3, 4, 5, or 6, wherein said fragment or variant has substantially the same serologic reactivity or substantially the same T-cell reactivity as the native polypeptide;

d) a variant polypeptide having at least about 20% to 99.99% identity to a polypeptide provided in Table 2, 3, 4, 5, or 6 or selected from the group consisting of SEQ ID NO: NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, and 27;

e) a polypeptide epitope as set forth in Table 2, 3, 4, 5, or 6; or

f) a multi-epitope construct: 1) comprising at least one epitope set forth in Table 2, 3, 4, 5, or 6; 2) comprising a polypeptide selected from the group consisting of SEQ ID NO: NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, and 27 and at least one epitope set forth in Table 2, 3, 4, 5, or 6; or 3) comprising and at least one epitope set forth in Table 2, 3, 4, 5, or 6 and one or more polypeptide selected from the group consisting of SEQ ID NO: NO: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, and 27.

23. The polypeptide epitope according to claim 22, wherein the polypeptide epitope is a CTL-inducing peptide epitope.

24. The polypeptide epitope according to claim 22, wherein the polypeptide epitope is a HTL-inducing peptide epitope.

25. The method for eliciting an immune response in an individual comprising the administration of a composition comprising polypeptides according to claim 22, 23, or 24 to an individual in amounts sufficient to induce an immune response in the individual.

26. A composition comprising a pharmaceutically acceptable carrier and a polypeptide according to claim 22, 23, or 24.

27. The composition according to claim 26, wherein said carrier is an adjuvant.

28. A method of detecting a *P. falciparum* antigen comprising contacting a biological sample obtained from an individual with a polypeptide according to the claim 22, 23, or 24 and detecting the formation of an antibody-antigen complex or detecting the stimulation of T-cells obtained from the individual.

29. An isolated antibody, or fragment thereof, that specifically binds to a polypeptide as set forth in claim 22, 23, or 24.